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ABSTRACT

This paper describes a college math and computer science educator's experience integrating multimedia materials in classroom instruction. It serves as a "tutorial" for non-computer science educators considering adding multimedia presentations to their instruction. The paper covers: the time commitment for developing and integrating multimedia materials; software choices; hardware requirements and options--development concerns and advice; storage and retrieval; and staying current with the rapidly changing field. (SWC)

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Multimedia for the Non-Computer Science Faculty Member

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Abstract

Have you wondered how some faculty find the time to learn some of the more sophisticated multimedia presentation development software out there? On top of that, how do they find the time to re-vamp their courses utilizing the newly acquired technology? Where do they find the resources? How do they learn what works and what doesn't?

This "Tutorial" session will answer how this author did it, while teaching at an institution where a twelve hour load is the norm and even higher overloads are common. If you are considering "taking the plunge" but are not yet convinced enough to devote a whole day to a pre-conference seminar, then this 45 minute session may be just right for you.

The topics will cover:

- Describing the time commitment
- Software choices
- Hardware requirements (the necessities) -Development concerns and advice -Hardware options (the niceties)
- Storage and retrieval (Things I learned the hard way)
- How do you stay current?

We will them open it up for questions and discussion since that is often where I learn the most at ASCUE.

Introduction

I have been utilizing software packages to develop materials for the classroom since the mid to late eighties. Early attempts were limited to creating slides on acetate utilizing Harvard Graphics and could not be called "multimedia," but they did represent a change in the delivery system I was used to using. In math classes, I was on the chalkboard, and in computer classes, I usually used acetates and erasable colored pens. Even then I noticed that when I took the acetates back to the office to "wash off" that I would start to rethink my approach to some of the written material. I would reconsider the content, and sometimes I would rethink the sequence, but invariably I would wish that

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I could somehow bring the material to life better through the use of support materials, motion, color, sound, etc. About the only consistent success was the utilization of "show and tell" props for hardware in the computer courses, and I continue to use those today when I can get a hold of them and make them available in the classroom (although, getting of a hold of a real supercomputer to "show off" in class is obviously out of the question. I also took advantage of the typical "dice" and "playing cards" probability examples common in many statistics and probability courses to develop actual or simulated experiments to demonstrate mathematical concepts, but the computer did make itself more of a pedagogical tool early in my teaching of statistics due to the availability of number crunching stat packages readily available to everyone, as well as the ability of even the earliest spreadsheets to perform the many tedious computations often necessary to perform the analysis. I do admit that I have not yet realized a gain in the Algebra course I am teaching now. I still am using chalk, LOTS of problems worked as a group on the board, etc. I have used e-mail and to disburse information efficiently, but I do not utilize technology to the extent that I do in my computer courses. How do you find the time?

This is one question I am invariably asked, especially as it relates to staying abreast of all the new technological advances and opportunities out there. The answer is relatively simple. I chose to make "getting up to date" a priority in my professional life and I chose which new "toys" I would play with first. In my case, since I had some familiarity with "slide show software," it was more natural for me to explore MM software in 1990-92 than it was to explore the internet, at which I had relatively little experience. I knew my computer application courses would require me to learn browsers, email, discussion lists, news groups, and other internet applications, but I had to make a conscious decision to commit to the use of a multimedia presentation package to revamp ALL my lecture material since that was definitely optional.

The first step I took in the MM adventure was to attend an ASCUE hands on workshop on the use of multimedia packages in the classroom. The class happened to utilize COMPEL, a package which was receiving very strong reviews at that time (1993). I happened that same week to locate an article on "Presentation Powerhouses" in a MM magazine and started doing some comparison shopping. At that time, the two packages (which were affordable and did not require formal scripting) which stood way above the rest were COMPEL and ASTOUND, with the latter receiving a half a star better rating. Using the old "Consumer Reports" mentality, I bought ASTOUND and I have not regretted it for one minute.

I chose one course as my target for converting materials to a MM format. The computer literacy course lent itself nicely since it did require consistency between multiple sections and its content did change very often, requiring the updating of the MM materials every time I taught it (often between classes during a 15 minute break) The problem was, while text material was readily available, the clip art and "figures" which were so badly needed to portray many of the hardware and software tool were not readily available (1993-4). At the time, text books did not yet come with pre-packaged MM slide shows. My first semester was spent creating "shows" for the literacy course using lots of text, SOME images, and very little in the way of MM power tools. It did, however, give me a series of shows which could then be revised, edited to keep up to date, and added to as far as images, sounds, animation, motion video, etc.

I took our text book and spent quite a few evenings scanning in most of the useful images on our HP

scanner, saving them in an appropriate format, and then importing them into the slide shows. This served a second purpose... I was forced to look through the text again, even though I had been using it before. It was not uncommon for me to bee a little less careful during a second or third semester with a text book, believing that I knew its content already. The enforced rethinking of the topics allowed me to expand coverage where appropriate, as well as delete coverage which I noted did "not work" the way I'd have liked. Preparing a "show" requires me to generate notes, identify which diagrams and pictures I wish them to see, identify which topics need updating (since texts are behind the cutting edge before they even hit the market), and to identify which topics I simply do not wish to cover.

I estimate that the first semester required approximately 8-10 hours per week (now you can usually eliminate scanning time since most texts come with "figures on CD") in material preparation and revision. Following semesters required about half that, barring a change in text books. Every so often I will choose a module which lacks "pizzazz" and refresh it with updated pictures, full motion video, and my own digital camera images. This usually requires the original 8-10 hours per week depending of course on material availability. I liken this initial load to "teaching an extra class" and subsequent semesters with teaching a prep you have not had in a while. These situations are not strangers to most of us.

Software Choices

I happen to choose ASTOUND since at the time I was getting involved, Powerpoint was not yet nearly as powerful, and Presentation was really quite under whelming (and still is in comparison IMHO). Other choices such as Compel, Director, Toolbox, Harvard Graphics, and other authorware either were under powered, over priced, had a steep learning curve (some with scripting) or a combination of the above.

Astound 4.0 still has better features for object control than all the rest, but Powerpoint is improving all the time, and has almost caught up. I am still more familiar with Astound so it is my preferred multimedia tool. The good new is, more and more of us are almost "expected" by our students to utilize the technology where appropriate. The reason I say this is "good news" is that I usually will jump on any band wagon which I feel may leave without me (and leave me in the dust to boot!) especially when so many professionals I respect seem to be increasing their productivity as well as knowledge by joining in. The issue may not be WHICH package you choose, but more a matter of CHOOSE ONE AND GET GOING!

Hardware Requirements

Minimum configurations are based on your level of expertise and your desire to include full motion video, sound, and multitasking capabilities into presentations. If you are still budget constrained to a 486 platform, a minimum of 16 MB of RAM will make it a usable albeit a bit cumbersome environment to develop MM presentations. Remember that you are limited by the LOWEST COMMON DENOMINATOR of the platform you use to create the MM tool and the platform(s) you use to utilize to show the MM tool. Beware of the show developed on a Pentium 166 with 32 MB of RAM, a 17" screen, and a 4 MB video card -- which will then be shown in a classroom with a 486 with 8 MB of RAM, and projected through a 640x480 projection panel under less than optimal

lighting conditions.

You must have some source of video capture, whether still or full motion. Until recently, we have been limited to still capture through a scanner and publicly available graphics files available through text books, the internet, friends, software packages, etc. I recently have added a digital camera to my tools and soon will install a video capture board on a system at school. Of course, we always have been able to PLAY full motion video (somewhat choppy on our old 486-33's before 1996) and they are becoming more and more available through text book publishers as prt of the bundled instructor materials.

My office currently has a 586-133 with 16 MB RAM (which I increased to 32 MB at my expense) and very inexpensive speakers and sound card (JUST enough to be heard). The classroom is being updated with Pentiums as this conference proceeds, so until recently I utilized my Pentium 133 notebook system with 32 MB RAM to play my MM shows. The library is also upgrading (they were 386's) so they caused a problem in posting MM shows on their systems until recently. We do have the main lab and the computer classrooms in the library which have always had systems capable of playing the MM shows.

Hardware Niceties

The most interesting recent addition has been the digital camera I purchased. It has opened up whole new horizons of possibilities regarding the capture of images which are copyright free and exactly what I want to show. For example, I always felt that a computer literacy student should see the inside of a computer, and see what a circuit board looks like with the connectors to the disk drives and video cards, etc. I used to bring in a case, usually of a system which CSD was working on at the time or a system I could get my hands on quickly and return quickly. The problem was that the classroom suddenly moved away from CSD and getting systems to and from class was a royal pain. Instead I utilized "pictures" out of our text which I scanned in. That was a good alternative, but did not always show all the "bells and whistles" I wanted them to experience. The digital camera allows me to get closeups of WHATEVER I can get a hold of and insert them into y MM presentation without worrying where the system was going to come from or how it would be returned, etc.

Another real nice add on is an external portable storage device like my ZIP drive. It allows me to transport 100 MB of "shows" and resources on a single disk. The only trick of course is that all systems need to have a ZIP drive or at least one system connected to a network need a zip drive so you can transport it to a network drive from home (without FTP'ing). I do most of my development work on my notebook, and I save the work on my hard disk as well as a ZIP drive. When I go to play it, I either bring my notebook, or I upload the file through the ZIP drive in my office machine. I used to use a parallel port version, but recently changed to the SCSI version due to its faster throughput time. It also makes a very nice medium to develop and upload home pages to the web server at school. I do not suggest "playing" the MM show from a parallel port ZIP drive as I have had some minor bottleneck problems when I tried. I did not have that problem with the SCSI ZIP drive, BUT the SCSI drive requires a special adapter card to be installed in each system whereas the parallel port version hooks up to any printer port.

I also experienced some early difficulties displaying full motion video from an 3x CD-ROM player,

but that technology is much better now and should not present a problem. Any Pentium based machine should display motion video at an ample playback rate, even when more than one program is running (often the case in my literacy class) as long as there is at least 16 MB RAM (32 MB is recommended as noted earlier) and a CD-ROM which is 4x or better (it is hard to find them that slow these days!)

Storage and Retrieval

One of the important tips I can give you regarding minimum configurations involves disk space. If you must transport your MM show, you must either be certain that ALL resources are self contained in the show (requiring LOTS more disk space) or that the resources are located in the exact same locations (disk drive designators and path specifications for example) as they are at the development work station. I had some trouble with two different machines, one of which called my ZIP drive D:, and the other E:. I also found out that the "mappings" of network drives often change as I move from my office (where the public drive is Q:) to the classroom (where the public drive is H:). If I keep shows totally self contained, I do not have that problem, BUT I do have the responsibility to be sure the show is where it is supposed to be when it is supposed to be there, and that I do not hog all the public disk space. As disk space has become so inexpensive, this is less of an issue today than it was just two years ago. I also utilize my ZIP drive to minimize these problems of storage and retrieval. The only thing I need is either a parallel port ZIP drive, or I need to be sure that the SCSI adapter is installed in the machine I will be using. I still prefer, as time permits, to make a temporary subdirectory on the C drive and transfer the MM show to that subdirectory to play it from the faster hard drive. I can then erase it from the host hard drive if need be. I found early on that having different versions of a show on three different locations is inevitable unless you centralize on ONE main form of storage--a ZIP drive in my case.

How Do You Stay Current?

This may perhaps be the most frustrating part of the MM and internet craze. I vividly remember just a few years ago wondering what a few of the ASCUE members were talking about when they said WWW and feeling like a dinosaur (techno-saur?) in an instant. I also remember putting slides onto expensive transparency acetates and getting frustrated how long coles output took to produce with plotters, and even more frustrated how many times the slide would have to be redone due to updated material. I used the same acetates over again since they were so time consuming to change and reprint, and therefore could not put anything on them which would change too rapidly. Think what that means in a computer literacy class!

The advice I have is to keep attending conferences like ASCUE, The Association for Applied Interactive Multimedia (AAIM) in Chatanooga this July, the Higher Education Network Association (HENA) in SC in October, EDUCOM, and others. Having a critical mass on your campus is nice, but for those of us on very small campuses where the faculty are slow to jump on the MM and internet bandwagon, we have to find our critical mass through other professional associations at conferences and on line. A Net Search using the word multimedia found 459,722 sites, a Yahoo search located 61 categories and 5,430 sites, while an Alta Vista search found approximately 4,000,000 documents containing the word. Talk about critical MASS...
When all is said and done, the only hope you have is to:

1. not get up tight that many are doing more than you
2. not get flustered when the hardware/software does not act as planned (have a backup activity)